

Courtney Sterling Rowe

crowe3@ucmerced.edu | [LinkedIn](#) | [GitHub](#)

OBJECTIVE

Ph.D. student in Cognitive & Information Science creating interpretable and biologically-inspired AI by neuromorphic architectures. Using years of experience in deadline-driven professional environments and a strong technical background to offer mature, self-starting approaches in collaborative research, scaling technical infrastructures, and leading complex projects.

AWARDS

Cal-Bridge Doctoral Fellowship

- Awarded through the California State University/University of California/Community College system to support underrepresented scholars pursuing Ph.D. studies in STEM fields. Funded by the National Science Foundation and the State of California, Cal-Bridge provides research mentorship, professional development, and full doctoral transition support.

Cal-Bridge Scholar, Cohort 11

- Selected for academic excellence, research potential, and commitment to broadening participation in STEM.

RESEARCH INTERESTS

- | | |
|----------------------------------|----------------------------|
| • Astrocytes | • Deep Learning |
| • Signal Processing | • Neuromorphic Computing |
| • Dynamical Associative Networks | • Dimensionality Reduction |
| • Modern Hopfield Networks | • Embodied Cognition |
| • Artificial Neural Networks | • Memory |
| • Logic | • Metaphor |
| • Computability | • Consciousness |

TECHNICAL SKILLS

Languages:

- Python
- Java
- JavaScript
- C++
- SQL
- YAML
- HTML
- CSS

Tools and Frameworks:

- Kubernetes
- Docker
- GitHub
- JupyterNotebook
- Linux (Ubuntu)
- TensorFlow
- HuggingFace
- National Research Platform
- TinkerCad

RELEVANT EXPERIENCE

DAN Research Group | Remote & Bloomington, IN

March 2025 - Present

Research Intern - Dr. Anthony Beavers, Indiana University

- Studying metacognition in neuromorphic architectures under Dr. Anthony Beavers.
- Co-authoring a paper on distributed vs. local representations and their relation to spurious correlations in AI systems.

Information Technology Services | Arcata, CA

May 2025 - Present

Research Student Assistant - California State Polytechnic University, Humboldt

- Supported the university's research computing infrastructure (Docker/Kubernetes on the Nautilus NRP cluster).
- Assist faculty and student researchers with code review and container deployment for AI and data projects.
- Engineered a scalable deployment of Dr. Alana Chin's research using Docker and Kubernetes on the Nautilus NRP cluster, achieving 100% operational capacity and resolving previous limitations in scaling the original architecture.

Summer Training Academy for Research Success | San Diego, CA

June 2025 - August 2025

Researcher- University of California San Diego

- Fine-tuned ModernBERT for thesis classification aligned with UN Sustainable Development Goals.
- Developed an open-source prototype for AI-driven metadata tagging in academic libraries.

University Press | Arcata, CA

March 2025 - May 2025

Research intern- California State Polytechnic University, Humboldt

- Applied geometric dimensionality reduction (M-PHATE) to visualize deep neural network training dynamics.
- Presented findings at UCSD Summer Research Conference and UC Irvine Fall Research Symposium.

Office of the Registrar | Arcata, CA

August 2024 - May 2025

Student Assistant- California State Polytechnic University, Humboldt

- Managed and cleaned institutional database systems; improved data consistency across student records

Merced College | Merced, CA

March 2024 - May 2024

Researcher- National Science Foundation | Computing Alliance of Hispanic Serving Institutions

- Designed autonomous drone payload prototype for low-cost air quality monitoring in underserved communities in California's Central Valley
- Presented Poster at the Great Minds in Stem conference.

United States Postal Service | Topping VA, Oakhurst, CA

June 2015 - January 2023

Clerk PTF

- Supervised a team of 5+ | Oversaw the daily operations of a level 18 Post Office
- Dedicated Customer Service with Compassionate complaint resolution

- Maintained Federal Confidentiality and Reporting Standards
- Promptly Met Hourly, Daily, Weekly, Quarterly, and Annual deadlines
- Maintained records and retention standards
- Spotless Personnel & Performance Official Record

[Time gap due to illness]

Americorps | Richmond, VA

March 2009 - May 2011

Program Director | SYNERGEO

- Oversaw a team of 10+ employees and volunteers to support community development and outreach to underserved and at-risk communities in Richmond Virginia's inner city.
- Held weekly Community Dinners for the unhoused
- Designed and implemented an inner-city at-risk youth tutoring program.
- Tutored Refugee families in English as a second language and their children in Mathematics.

RESEARCH

Neuromorphic Architectures & Metacognition

Dynamic Associative Networks (DAN) Research Group | Indiana University

Ongoing

- Investigating metacognition in transparent architectures by building foundational models that learn by physically altering their structure, not by tuning weights
- Research aims to discover principles of robust, biologically-plausible cognition by abandoning the black box paradigm

Kernel Lenses: Deep Learning Interpretability

Summer Training Academy for Research Success | University of California San Diego Summer 2025

- Wrote multiple Kernels in Python utilizing M-PHATE to visualize gradients of deep neural networks as a dynamical system.
- Used geometric dimensionality reduction to gain interpretability and discern when classification networks depart the lazy training regime (NTK theorem) and enter a new training regime

Toward Automated Thesis Classification: Open-Sourced AI Foundations for Libraries

The Press | California State Polytechnic University, Humboldt

Spring 2025

- Fine-tuning a ModernBERT model to classify university theses with UN Sustainable Development Goals, creating a proof-of-concept for open-source AI solutions in academic library settings.

Abstract Reasoning Corpus' AGI Challenge

Researcher for Dr. Benjamin Kovitz | California State Polytechnic University, Humboldt Fall 2024

- Conducted an in-depth investigation into solutions for the Abstraction and Reasoning Corpus (ARC) challenge, a significant unsolved benchmark in AI. The project involved a systematic survey of diverse paradigms, from neuro-symbolic and functional programming techniques to neural architectures like Hopfield and Capsule Networks. This independent research deepened my understanding of the theoretical strengths and limitations of various models in complex reasoning tasks.

Air Inequality: Towards a Drone-Based Solution for Increasing Air Quality Granularity in low-socioeconomic and low-air quality areas without citizen burden

NSF REU | *Merced College*

Spring 2024

- To address air inequality by developing a system to gather highly granular, localized air quality data in low-socioeconomic areas without creating a burden on the citizens living there.
- Created a proof-of-concept payload prototype for an autonomous drone system equipped with air quality sensors. This system was designed to fly pre-programmed routes to map pollution levels across greater areas than traditional, stationary monitoring stations.

TALKS

- **"Astrocytes & AI"** *Appropriate Computing Discussion Group, with Dr. Michael Willet: California State Polytechnic University, Humboldt, February 2026.*
- **"Exploring ANNs and DANs to Show How Distributed Representations Learn Spurious Correlations and How Local Architectures Prevent Them."** *Logic Seminar, Department of Mathematics, Indiana University, April, 2026.*
- **"Neuromorphic and Appropriate Computing."** *Appropriate Computing Discussion Group: California State Polytechnic University, Humboldt, October 2025*
- **"Kernel Lenses: A Comparative Analysis of Gradient Trajectory Visualization in Deep Neural Networks."** *Cal-Bridge Fall Symposium University of California, Irvine, 2025*
- **"Kernel Lenses: A Comparative Analysis of Gradient Trajectory Visualization in Deep Neural Networks."** *Summer Research Conference, University of California, San Diego, 2025*
- **"Toward Automated Thesis Classification: Open-Sourced AI Foundations for Libraries."** *ideaFest, California State Polytechnic University, Humboldt, May 2025*
- **"BERT classification models: Introducing ModernBERT"** *Appropriate Computing Discussion Group: California State Polytechnic University, Humboldt, April 2025*
- **"Air Inequality: Towards a Drone-Based Solution for Increasing Air Quality Granularity in low-socioeconomic and low-air quality areas without citizen burden."** *Merced College, Great Minds in STEM conference, Sept 2024*

PAPERS

- **"Exploring ANNs and DANs to Show How Distributed Representations Learn Spurious Correlations and How Local Architectures Prevent Them."** *(working title) Co-authors: Courtney Rowe and Anthony Beavers.*
- **"Neuromorphic Computing, Neuroscience, and Phenomenology."** *Co-authors: Anthony Beavers, Denizhan Pak, Courtney Rowe, Ling Sun, Alex Webb, and Matt Winter. (in progress)*

POSTERS

Ideafest | Arcata, CA

May 2025

- "Toward Automated Thesis Classification: Open-Sourced AI Foundations for Libraries."

Great Minds in STEM | Fort Worth, TX

September 2024

- "Air Inequality: Towards a Drone-Based Solution for Increasing Air Quality Granularity in low-socioeconomic and low-air quality areas without citizen burden."

EDUCATION

University of California Merced | Merced, CA

Aug. 2026 - Present

Ph.D. Student in Cognitive and Information Science

California State Polytechnic University, Humboldt | Arcata, CA

Aug. 2024 - May 2026

B.S. in Computer Science

Merced College | Merced, CA

Aug. 2023 - May 2024

**Transferred (Community College)*

Virginia Commonwealth University | Richmond, VA

Aug. 2005 - Dec 2014

B.A. in Philosophy

COURSEWORK

- **Computer Science:** Algorithms, Architecture, Data Structures, Database Design, Operating Systems, Python, Software Engineering, Telecommunications, Computational Models, Machine Learning, Logic + Computability
- **Philosophy:** Ethical Theory, Mind + Reality, Philosophy of Science, Reason + Knowledge.
- **Mathematics:** Abstract Algebra, Calculus I & II, Differential Equations, Discrete Mathematics, Linear Algebra, Statistics.

COMMUNITY SERVICE [30 YEARS CONSECUTIVELY]

Leadership & Mentorship Roles

- Lions Club (2015-2021) - Secretary & Treasurer
- Martial Arts Assistant Teacher (2011-2021)
- Americorps Program Director (2009-2011)
- ROSMY Group Facilitator (2009-2011) - Held safe spaces for LGBTQ+ youth

Direct Community Service

- American Legion Women's Auxiliary (2021-Present)
- Elder Care Volunteer (2001-2004 / 2017-2021)
- International Refugee Tutor (2009-2011)
- Circle K International (2005-2009)
- International Student English Tutor (ESL) (2005-2009)
- SPCA Volunteer (1999-2005)
- Community Roadside Cleanup (1995-2000)